

What is claimed is:

- 1 1. A method of preparing cellulose ethers comprising the steps of:
 - 2 (a) obtaining mercerized and recovered cellulose pulp; and
 - 3 (b) converting the mercerized and recovered cellulose pulp into
 - 4 the cellulose ethers,
 - 5 wherein the mercerized cellulose pulp in step (a) was mercerized with a cellulose II
 - 6 mercerizing agent, the cellulose pulp is southern softwood kraft, the mercerized and
 - 7 recovered cellulose pulp has a TAPPI 230 om-89 viscosity of at most 12 cP, and when the
 - 8 cellulose ether prepared is hydroxyethyl cellulose, the mercerized and recovered cellulose
 - 9 pulp has at least one of the following properties:
 - 10 (i) a TAPPI 230 om-89 viscosity less than 10.4 cP or greater than 11.2 cP,
 - 11 (ii) a solubility in 10% sodium hydroxide as determined by ASTM D 1696-95
 - 12 of greater than 2.3%,
 - 13 (iii) a solubility in 18% sodium hydroxide as determined by ASTM D 1696-95
 - 14 of greater than 1.3%,
 - 15 (iv) not been prehydrolyzed, or
 - 16 (v) not been bleached with elemental chlorine.
- 1 2. The method of claim 1, wherein the cellulose ether prepared is
- 2 hydroxyethyl cellulose and the mercerized and recovered cellulose pulp has a TAPPI 230
- 3 om-89 viscosity less than 9.25 cP.
- 1 3. The method of claim 2, wherein the cellulose ether prepared is
- 2 hydroxyethyl cellulose and the mercerized and recovered cellulose pulp has a TAPPI 230
- 3 om-89 viscosity less than 8 cP.
- 1 4. The method of claim 1, wherein the mercerized and recovered
- 2 cellulose pulp has a TAPPI 230 om-89 viscosity less than 9.25 cP.
- 1 5. The method of claim 4, wherein the mercerized and recovered
- 2 cellulose pulp has a TAPPI 230 om-89 viscosity less than 8 cP.

1 13. The method of claim 12, wherein the cellulose pulp in step (a)(i) is
2 mercerized with an aqueous solution containing from about 9 to about 24% by weight of
3 sodium hydroxide, based upon 100% weight of total aqueous solution.

1 14. The method of claim 13, wherein the cellulose pulp in step (a)(i) is
2 mercerized with an aqueous solution containing from about 13 to about 24% by weight of
3 sodium hydroxide, based upon 100% weight of total aqueous solution.

1 15. The method of claim 1, wherein step (a) comprises:
2 (i) mercerizing cellulose pulp; and
3 (ii) washing the mercerized cellulose pulp.

1 16. The method of claim 12, wherein the mercerized cellulose pulp in
2 step (a)(ii) is washed with an aqueous solution.

1 17. The method of claim 16, wherein the washing step is continued
2 until the residual water has a pH of less than about 10.

1 18. The method of claim 16, wherein step (a) further comprises (iii)
2 drying the mercerized and washed, neutralized, or washed and neutralized cellulose pulp.

1 19. The method of claim 18, wherein the mercerized and dried cellulose
2 pulp contains less than about 20% by weight of moisture content, based upon 100% weight
3 of total cellulose pulp and water.

1 20. The method of claim 1, wherein step (a) comprises:
2 (i) treating cellulose pulp to form a cellulose floc;
3 (ii) mercerizing the cellulose floc; and
4 (iii) washing, neutralizing, or neutralizing and washing
5 the mercerized cellulose floc.

1 21. The method of claim 1, wherein the mercerized and recovered
2 cellulose pulp is substantially free of cellulose III.

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1 30. The method of claim 1, wherein step (b) comprises converting the
2 mercerized cellulose pulp into the cellulose ethers via a cellulose floc intermediate.

1 38. The method of claim 1, wherein the cellulose ether is a
2 carboxymethyl cellulose.

1 39. The method of claim 1, wherein the cellulose ether is a methyl
2 cellulose.

1 40. The method of claim 1, wherein the cellulose ether is a nonionic
2 ether.

1 41. The method of claim 1, wherein the cellulose ether is an ionic ether.

1 42. A carboxymethyl cellulose ether prepared by the method of claim
2 38.

1 43. A methyl cellulose ether prepared by the method of claim 39.

1 44. A nonionic cellulose ether prepared by the method of claim 40.

1 45. An ionic cellulose ether prepared by the method of claim 41.

1 46. A method of preparing cellulose floc comprising the steps of:
2 (a) obtaining mercerized and recovered cellulose pulp, and
3 (b) treating the mercerized pulp to form the cellulose floc,
4 wherein the cellulose pulp is southern softwood kraft and the mercerized and recovered
5 cellulose pulp is substantially free of cellulose III and has a TAPPI 230om-89 viscosity of
6 at most 12 cP.

1 47. The method of claim 46, wherein the mercerized and recovered
2 cellulose pulp has a TAPPI 230 om-89 viscosity less than 10.4 cP or greater than 11.2 cP.

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1 48. The method of claim 47, wherein the mercerized and recovered
2 cellulose pulp has a TAPPI 230 om-89 viscosity less than 9.25 cP.

1 49. The method of claim 48, wherein the mercerized and recovered
2 cellulose pulp has a TAPPI 230 om-89 viscosity less than 8 cP.

1 50. The method of claim 46, wherein the mercerized and recovered
2 cellulose pulp has a solubility in 10% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 2.3%.

1 51. The method of claim 50, wherein the mercerized and recovered
2 cellulose pulp has a solubility in 10% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 3.0%.

1 52. The method of claim 51, wherein the mercerized and recovered
2 cellulose pulp has a solubility in 10% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 5.0%.

1 53. The method of claim 46, wherein the mercerized and recovered
2 cellulose pulp has a solubility in 18% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 1.3%.

1 54. The method of claim 53, wherein the mercerized and recovered
2 cellulose pulp has a solubility in 18% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 2.0%.

1 55. The method of claim 54, wherein the mercerized and recovered
2 cellulose pulp has a solubility in 18% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 4.0%.

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1 63. The method of claim 62, wherein the mercerized and recovered
2 cellulose floc has a TAPPI 230 om-89 viscosity less than 10.4 cP or greater than 11.2 cP.

1 64. The method of claim 63, wherein the mercerized and recovered
2 cellulose floc has a TAPPI 230 om-89 viscosity less than 9.25 cP.

1 65. The method of claim 64, wherein the mercerized and recovered
2 cellulose floc has a TAPPI 230 om-89 viscosity less than 8 cP.

1 66. The method of claim 62, wherein the mercerized and recovered
2 cellulose floc has a solubility in 10% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 2.3%.

1 67. The method of claim 66, wherein the mercerized and recovered
2 cellulose floc has a solubility in 10% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 3.0%.

1 68. The method of claim 67, wherein the mercerized and recovered
2 cellulose floc has a solubility in 10% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 5.0%.

1 69. The method of claim 62, wherein the mercerized and recovered
2 cellulose floc has a solubility in 18% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 1.3%.

1 70. The method of claim 69, wherein the mercerized and recovered
2 cellulose floc has a solubility in 18% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 2.0%.

1 71. The method of claim 70, wherein the mercerized and recovered
2 cellulose floc has a solubility in 18% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 4.0%.

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1 78. The method of claim 77, wherein the mercerized and recovered
2 cellulose pulp has a solubility in 10% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 3.0%.

1 80. The method of claim 75, wherein the mercerized and recovered
2 cellulose pulp has a solubility in 18% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 1.3%.

1 81. The method of claim 80, wherein the mercerized and recovered
2 cellulose pulp has a solubility in 18% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 2.0%.

1 82. The method of claim 81, wherein the mercerized and recovered
2 cellulose pulp has a solubility in 18% sodium hydroxide as determined by ASTM D 1696-
3 95 of greater than 4.0%.

1 83. The method of claim 75, wherein the mercerized and recovered
2 cellulose pulp has not been prehydrolyzed.

1 84. The method of claim 75, wherein the mercerized and recovered
2 cellulose pulp has not been bleached with elemental chlorine.